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Laughing Gull (*Larus atricilla*)
Photograph By C. J. Stine

MARYLAND NATURALIST

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MARYLAND NATURALIST



LAUGHING GULL

On the cover of this issue is a photograph of a nesting laughing gull, *Larus atricilla*, by Charles J. Stine.

From April to November it is one of the most frequently encountered birds in the coastal areas of Maryland. It is uncommon away from tidewater country.

The laughing gull averages $16\frac{1}{2}$ inches in length. Its small size, lead-gray wings with white trailing edges and laughter-like call identify the species. The black hood of summer is replaced by white in the winter.

It ranges on the east coast from Maine to northern South America and on the west coast from lower California to Central America.

The gregarious nature of the laughing gull is manifest in large breeding colonies, usually on islands. In our area the laughing gull lays three olive flecked with brown eggs in the first part of June. The nest itself is a well woven structure of weeds and grasses high enough to protect the eggs from all but exceptionally high storm tides.

Although it seems to prefer tidewater fish and mud flat crustaceans (alive or dead) it may be seen in the spring well inland on the Delmarva peninsula following the plow in search of earthworms and insects.



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Fig. 1

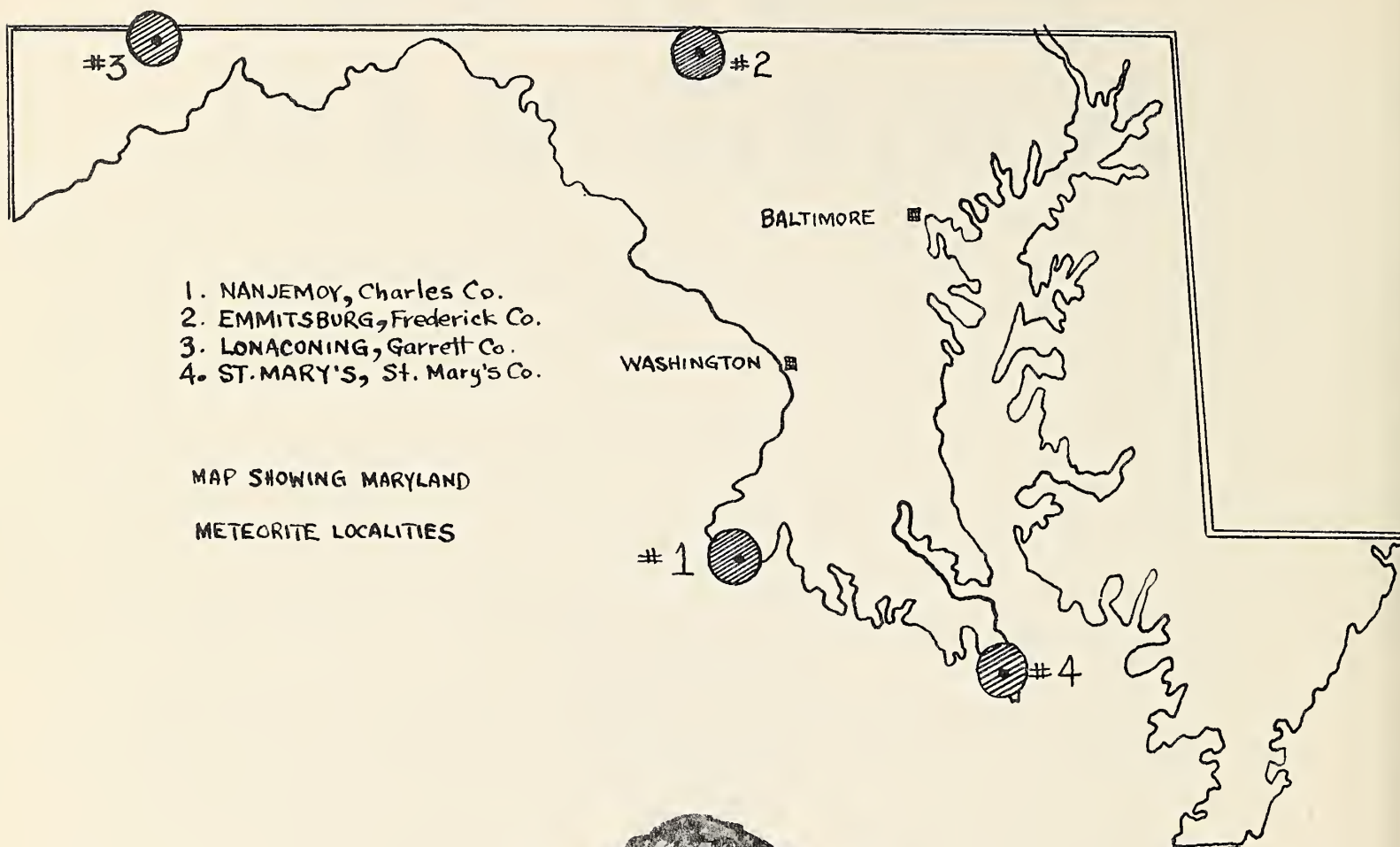


Fig. 2



FRAGMENT OF THE ST. MARY'S METEORITE

which fell near Ridge, Maryland
in June 1919

MARYLAND METEORITES

by BRYANT MATHER *

Seventeen years ago I had the pleasure of reporting (Mather, 1938) the discovery of the fourth authenticated meteorite from Maryland. Since, so far as I know, no additional occurrences have been reported since then, it seems appropriate to summarize the available information on Maryland meteorites with the primary purpose of stimulating interest in the subject to the end of adding to our knowledge. No previous summary of information on Maryland meteorites seems to have been published. The Pennsylvania Geologic Survey has issued an excellent bulletin (Stone, 1932) and additional articles (Stone, 1936) on Pennsylvania meteorites. No collection exists in Maryland in which samples of Maryland meteorites are displayed.

The four Maryland meteorites now known are listed below and their places of fall or discovery are indicated on the map (Fig.1):

<u>Name</u>	<u>Date</u>	<u>Discovery</u>	<u>Type</u>	<u>Weight,g</u>	<u>Location</u>
1. Nanjemoy	1825	Seen to fall	Stone	7599	Distributed
2. Emmitsburg	1854	Ploughed up	Iron	177	"
3. Lonaconing	1888	" "	"	1260	"
4. St. Mary's	1919	Seen to fall	Stone	25	Md. Acad. Sci.

In this summary the available information on the authenticated occurrences will be presented and then information on several others that it was impossible to authenticate. It is hoped that others will pursue these and other accounts.

NANJEMOY

The Nanjemoy meteorite was seen to fall at noon on 10 February, 1825, near Nanjemoy in Charles County, Maryland. The locality is given as latitude 38 degrees 28 minutes north and longitude 77 degrees 16 minutes west. The reported weight was 7444 grams (16 1/2 pounds). The meteorite is a stone classified as a spherical chondrite (Class Cc of Brezina, or Luceite type 37, subtype 2 of Meunier).

The first account of this fall was given by Carver (1825) : "I take the liberty of forwarding you a notice of a meteoric stone which fell in this town on the morning of Thursday, February 10, 1825. The sky was rather hazy, and the wind southwest. At about noon the people of the town and of the adjacent country were alarmed by an explosion of some body in the air, which was succeeded by a loud whizzing noise, like that of air rushing through a small

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aperture, passing rapidly in the course from northwest to southeast, nearly parallel with the river Potomac. Shortly after, a spot of ground on the plantation of Capt. Wm. D. Harrison, a surveyor of this port, was found to have been recently broken, and on examination a rough stone of an oblong shape, weighing 16 pounds 7 ounces, was found about 18 inches under the surface. The stone when taken from the ground, about half an hour after it was supposed to have fallen, was sensibly warm, and had a strong sulphurous smell. It has a hard, vitreous surface, and when broken appears composed of an earthy or siliceous matrix of a light slate color, containing numerous globules of various sizes, very hard and of a brown color, together with small portions of brownish-yellow pyrites, which became dark colored on being reduced to powder. I have procured for you a fragment of the stone, weighing 4 pounds 10 ounces, which was all I could obtain. Various notions were entertained by the people in the neighborhood on finding the stone. Some supposed it propelled from a quarry 8 or 10 miles distant on the opposite side of the river, while others thought it thrown by a mortar from a packet lying at anchor in the river, and even proposed manning boats to take vengeance on the captain of the vessel.

"I have conversed with many persons living over an extent of perhaps 50 miles square; some heard the explosion, while others heard only the subsequent whizzing noise in the air. All agree in stating that the noise appeared directly over their heads. One gentleman, living about 25 miles from the place where the stone fell, says that it caused his whole plantation to shake, which many supposed to be the effect of an earthquake. I can not learn that any fireball or any light was seen in the heavens; all are confident that there was but one report, and no peculiar smell in the air was noticed.

"I herewith transmit the statement of Captain Harrison, the gentleman on whose plantation the stone fell:

'On February 10, 1825, between the hours of 12 and 1 o'clock, as nearly as recollected, I heard an explosion, as I supposed of a cannon, but somewhat sharper. I immediately advanced with a quick step about 20 paces, when my attention was arrested by a buzzing noise, resembling that of a humming bee, which increased to a much louder sound, something like a spinning-wheel, or a chimney on fire, and seemed directly over my head, and in a short time I heard something fall. The time which elapsed from my first hearing the explosion to the falling might have been 15 seconds. I then went with some of my servants to find where it had fallen, but did not at first succeed (though as I afterwards found I had got as near as 30 yards to the spot); however after a short interval the place was found by my cook, who had (in the presence of a respectable white woman) dug down to it before I got there, and a stone was discovered from 22 to 24 inches under the surface, and which, after being washed, weighed 16 pounds, and which was no doubt the one which I had heard fall, as the mud was thrown in different directions from 13 to 16 steps. The day was perfectly clear, a little snow was then on the earth in some places which had fallen on the night previous. The stone when taken up had a strong sulphurous smell, and there were black streaks in the clay which appeared marked by the descent of the stone. I have conversed with gentlemen in different directions, some of them from 18 to 20 miles distant, who heard the noise, not the explosion. They inform me that it appeared directly over their heads. There was no fireball seen by me or others that I have heard. There

was but one report, and but one stone fell to my knowledge, and there was no peculiar smell in the air. It fell on my plantation, within 250 yards of my house, and within 100 of the habitation of my negroes. I have given this statement to Doctor Carver, at his request, and which is as full as I could give at this distant day, from having thought but little of it since. Given this 28th day of April, 1825."

An analysis of the meteorite was made and reported by Chilton (1826) as follows: "The piece of Maryland aerolite subjected to examination weighed 228.30 grams and lost 62.25 grams by immersion in water at 60 degrees. Its specific gravity is therefore 3.66. The external crust was taken off and the remainder powdered, not very finely, and separated into two parts by the magnet; 25 of which were taken for examination. The same quantity was taken of the unmagnetical portion. The unmagnetical portion yielded:

SiO ₂	Al ₂ O ₃	MgO	CaO	FeO	NiO	S	Total
14.90	0.05	2.60	0.45	6.15	0.80	1.27	= 26.22

The magnetic portion yielded:

FeO	NiO	SiO ₂	S	Total
24.00	1.25	3.46	Trace	28.71

A further account of the meteorite was given by Silliman (1826): "An excellent specimen, for which we are indebted to Dr Samuel D. Carver, weighs 4 pounds 5 ounces. Its dimensions are 7 by 3 by 4 inches; its form is that of an irregular ovoidal protuberance nearly flat where it was detached from the larger mass and bounded by irregular curves in the other parts of the surface. In all parts, except where it is viewed by a magnifier, it has more luster than is common. This coating is severed by innumerable cracks running in every direction and communicating with each other so as to divide the surface into polygons resembling honeycomb or madrepore, and no undivided portion of the surface exceeds half an inch in diameter. This circumstance is much less apparent upon the aerolites of Weston (1807), L'Aigle (1803), and Stannern in Moravia (1808); it appears to have arisen from the rapid cooling of the external vitreous crust after intense ignition. It is impossible to doubt that this crust is a result of great and sudden heat. In the Maryland aerolite it is not quite as thick as the back of a common penknife and, as in that of Weston and Stannern, it is separated by a well-defined line from the mass of the stone beneath. The mass of the stone is, on the fractured surface, of a light ash-gray color, or perhaps more properly of a grayish-white; it is very uniform in its appearance and not marked by that strong contrast of dark and light gray spots which is so conspicuous in the Weston meteorite. The fractured surface of the Maryland stone is uneven and granular, harsh and dry to the touch, and it scratches window decidedly, but not with great energy. To the naked eye it presents very small glistening metallic points and a few minute globular or ovoidal bodies scattered here and there through the mass of the stone. With a magnifier all these appearances are of course much increased. The adhesion of the small parts of the stone is so feeble that it falls to pieces with a slight blow and exhibits an appearance almost like

grains of sand. The metallic parts are conspicuous but they are much less numerous than the earthy portions which, when separated, are nearly white and have a pretty high vitreous luster, considerably resembling porcelain. They appear as if they had undergone an incipient vitrification and as if they had been feebly agglutinated by a very intense heat. I can not say that I observed in them, as M. Fleurian de Bellevue did in the aerolite of Jonzac (Journ. de Phys., tome 92, p.136), appearances of crystallization, although it is possible that there may have been an incipient process of that kind, especially as the small parts are translucent. The Maryland stone is highly magnetic; pieces as large as peas are readily lifted by the magnet and that instrument takes up a large proportion of the smaller fragments. The iron is metallic and perfectly malleable; although none of the pieces are larger than a pinhead, still they are readily extended by the hammer. The iron in the crust is glazed over so that the eye does not perceive its metallic character, but the file instantly brightens the innumerable points which then break through the varnish of the crust and give it a brilliant metallic luster at all the points where the file had uncovered the iron. The same is the fact with the Weston stone and with that of L'Aigle, but not with that of Stannern in Moravia; specimens of all of which and of the meteoric irons of Pallas, of Louisiana, and of Auvergne are now before me. The aerolites of Jonzac and of Stannern, as stated by M. Bellevue, are the only ones hitherto discovered that do not contain native iron and do not affect the magnet; still their analysis presents a good deal of iron which is probably in the condition of the oxide. The iron in the metallic state is very conspicuous in the Weston stone, sometimes in pieces 2 inches in length, and both in this stone and in that of Maryland it is often brilliant like the fracture of the meteoric iron of Pallas and of Louisiana. In the analysis of the Weston stone published in 1808 I did not discover chrome although it was afterwards announced by Mr. Warden. I have desired Mr. Chilton to reanalyze the Weston stone and he has nearly completed the labor. I am not quite sure that I discover pyrites in the Maryland aerolite, although it is mentioned by Dr. Carver in his letter in the preceding volume."

Partsch (1843) described the specimen of Nanjemoy in the Vienna collection: "Groundmass varying between light and dark gray, partly spotted with rust flecks; in part showing lighter but generally darker spherical inclusions firmly intergrown. There is a considerable sprinkling of iron and pyrrhotite. Crust rough and dull, broken by narrow clefts."

Shepard (1848) described it as follows: "Its crust resembles that of the Iowa stone (Marion), without, however, possessing its uniformity of thickness or its deep black color. The proportion and mode of dissemination of the nickel iron and of the pyrites is very similar in both; but the color of the earthy mineral in the Maryland is several shades darker and more inclined to blue. The iron-rust points are fewer than in the Iowa meteorite. Like the latter it is principally composed of Howardites; although rounded grains of olivine to the amount of perhaps 15 per cent are distinguishable with the aid of a microscope."

Meunier (1884) recalculated Chilton's analysis to percentages and gave it as follows: Nonmagnetic portion:

SiO ₂	MgO	CaO	Fe ₂ O ₃	NiO	Al ₂ O ₃	S	Total
59.6	10.4	1.8	24.6	3.2	0.2	5.08	= 104.88

Magnetic portion: SiO₂+MgO+CaO : 13.84, Fe : 96.00, Ni : 5.00 = 114.84

He also gives the specific gravity, according to Rumler, as 3.6062.

Brezina (1885) classed the Nanjemoy meteorite as a gray chondrite. In 1895 he removed it to the class of spherical chondrites and stated: "The Vienna specimen shows an inclination to Cc; the two pieces in the Tübingen collection of 100 and 82 grams weight, both with crust, show a decided spherical chondritic structure with a slaglike crust up to 2.5 mm in thickness."

The meteorite is distributed in a large number of collections. If we assume that the original weight was approximately 7599.35 grams (= 16 pounds 7 ounces; not "16.7 ounces" as stated by Merrill (1916) and that 228.3 grams were used by Chilton in analysis, there remains 7371 grams to account for. The following museum specimens are listed in order of weight.

<u>Location</u>	<u>Weight, g.</u>	<u>Reference</u>
Yale University, New Haven, USA	897	Farrington (1915)
Vienna, Austria	351	Wulffing (1897)
British Museum, London, England	325	Prior (1923)
London P.G., England	237	Wulffing (1897)
Tübingen, Germany	182	Brezina (1895)
Harvard University, Cambridge, USA	123	Huntingdon (1887)
Chicago Museum of Natural History, USA	106	Farrington (1916)
Budapest, Hungary	93	Wulffing (1897)
Geol. Survey of India, Calcutta	70	Brown (1914)
Copenhagen, Denmark	66	Wulffing (1897)
U.S. National Museum, Washington, USA	44	Merrill (1916)
Berlin, Germany	33	Rose (1864)
Amer. Museum of Nat. History, N.Y., USA	30	Reeds (1937)
Göttingen, Germany	9	Klein (1879)
Philadelphia Acad. Nat. Sci., USA	7	Gordon (in litt.)
Leningrad, Russia	6	Wulffing (1897)
von Braun collection	5	"
Paris, France	4	Meunier (1897)
Strasbourg, Germany	2	Wulffing (1897)
von Siemaschko collection	<u>2</u>	"
Total accounted for :	2592	
Unaccounted for:	<u>4779</u>	
Total:	7371	

EMMITSBURG

The Emmitsburg meteorite was found in 1854 near Emmitsburg in Frederick County, Maryland. The locality is given as latitude 39 degrees 42 minutes north and longitude 77 degrees 19 minutes west. The original weight is not reported and only 177 grams seem to be accounted for. The meteorite is an iron classified as a medium octahedrite (Class Om of Brezina).

In contrast to the careful and detailed accounts of the finding of the Nanjemoy meteorite, nothing at all seems to have been written of the finding of the Emmitsburg meteorite. The first reference seems to be by Brezina (1885) in which he mentions it as the representative of the "Emmitsburg Group" of octahedrites with medium lamellae. He gives the characteristics of this group as: "Lamellae straight, grouped, not very long; kamacite dark gray, hatched, in part spotted, with plain though not very strongly oriented sheen. Rhabdite very abundant, at times on the edges of the field taking the place of taenite. Width of lamellae 0.6 mm." In his 1895 catalog, Brezina remarks that Emmitsburg much resembles Plymouth. I have used the spelling "Emmitsburg" as given in the United States Postal Guide; the spelling used by Brezina is "Emmetsburg."

The distribution of the accounted for 177 grams is as follows:

Chicago Museum of Natural History, USA	64	Farrington (1916)
American Museum of Natural History, N.Y., USA	49	Reeds (1937)
U.S. National Museum, Washington, USA	27	Merrill (1916)
Harvard University, Cambridge, USA	10	Huntingdon (1887)
Vienna, Austria	9	Wulfing (1897)
British Museum, London, England	7	Prior (1923)
Dresden, Germany	2	Wulfing (1897)
Other collections	9	"

Prior (1923) in the British Museum catalog states that a mass weighing about one pound passed into the possession of Dr. J. R. Chilton of New York from whom S.C.H. Bailey obtained specimens as is indicated by a letter dated 7 January 1885 from S.C.H. Bailey that is in the files of the British Museum (Natural History) Mineralogy Department.

LONACONING

The Lonaconing meteorite was found in 1882 in Garrett County, Maryland not far from Lonaconing, Allegany County. The locality is given as latitude 39 degrees 35 minutes north and longitude 78 degrees 38 minutes west. The original weight was 1260 grams (45 ounces). The meteorite is an iron classified as a coarse octahedrite (Class Og of Brezina).

The meteorite was described by Foote (1892) as follows: "A physician residing near the Maryland line of Pennsylvania recently brought to me an iron mass to learn if it was meteoric, and this it proved to be. It was discovered in Garrett County, Maryland, about 12 miles from the post office of Lonaconing, not far from the Pennsylvania border. It was ploughed up about three or four years ago by a boy in the field. According to an analysis by Dr. Koenig it contains over 11 per cent of nickel and cobalt, the proportion of cobalt being unusually high. It is one of the best octahedral etching irons known, being even more characteristic than most of those that have been used for printing directly on paper. Besides the striking reticulated octahedral structure, it shows a large number of secondary lines regularly disposed with reference to the principal markings. These I believe to be similar to those described by Prof. J. Lawrence Smith, in a Wisconsin meteorite, under the name of Laphamite markings. The original weight was 45 ounces, but it has been reduced by analysis, cutting, polishing, etc. to 36.5 ounces."

Brezina (1895) described the meteorite as follows: "An iron of 1.2 kg. weight, in the form of an elliptical cylinder with slightly bent axis. The section shows along the natural surfaces a finely flecked zone of alteration 2 to 9 mm thick. The lamellae are puffy, taenite well developed, fields predominant, almost entirely filled with a repetition of systems of combs running in many different directions in the same field; field less frequently filled with a dark gray plessite. Two large plessite areas show finely shimmering central skeletons. Cohenite grains sometimes occur isolated in the kamacite. The kamacite bands are slightly granular, the kamacite combs much so."

The reported distribution of the meteorite is as follows:

<u>Location</u>	<u>Weight, g.</u>	<u>Reference</u>
School of Mines, Paris, France	750	Farrington (1916)
American Museum of Nat. Hist., N.Y., USA	123	Reeds (1937)
British Museum, London, England	74	Prior (1923)
Chicago Museum of Nat. Hist., USA	39	Farrington (1917)
Vienna, Austria	<u>33</u>	Wulff (1897)
Total accounted for:	1019	
Unaccounted for:	<u>16</u>	
Total	1035 (= 36.5 ounces)	

ST. MARY'S

The St. Mary's meteorite was seen to fall at about 6 P.M. on or about 20 June 1919, near the town of Ridge, St. Mary's County, Maryland. The weight of the fragment that is known to exist is 24.25 grams. The meteorite is a stone classified as a spherical chondrite.

The existence of the meteorite was recorded in the card catalog of the U. S. National Museum on 9 December 1937 and in the minutes of the Baltimore Astronomical Society for 10 January 1938. The first account was given by Mather (1938) as follows: "It is the purpose of the present paper to give a preliminary notice of the finding of the fourth meteorite from Maryland. In connection with a search by the author for reports of Maryland meteorites, he was, in October 1937, directed to Mr. Francis D. Cecil of the Astronomical Section of the Maryland Academy of Sciences. From Mr. Cecil there has been obtained considerable data and a fragment of a meteorite. This meteorite is to be known as the St. Mary's meteorite and is known to have fallen on or about June 20, 1919 at approximately 6:00 P.M. near the town of Ridge, St. Mary's County, Maryland. The meteor was observed in the sky by many persons and was seen to explode, the fragments appearing to settle slowly to the earth, most of them apparently falling into the Chesapeake Bay. The fragment which is the property of Mr. Cecil is a portion of a larger mass which has apparently been lost. The fragment available for study is roughly pyramidal consisting of three natural surfaces and one broken surface. These surfaces are roughly triangular and from 30 to 40 mm on an edge.

The fragment weighs 24.25 grams and has a specific gravity of 3.24. It is solid and compact. On the natural surfaces there is a thin black fused coating such as is frequently found on stony meteorites, and these surfaces are quite smooth. On the broken surface, the fresh meteorite is seen to have a dark gray color and an oolitic-like texture. This texture is due to the meteorite being composed of chondrules and phenocrysts, the size of these megascopically ranging from tiny points up to nearly 2 mm. It has been suggested that the meteorite is composed chiefly of enstatite and olivine. It is interesting to note that these two minerals have specific gravities of 3.1-3.3 and 3.27-3.37 respectively and that their average specific gravity is 3.26 whereas that observed for the meteorite is 3.24. This fact would tend to support the assumption that if iron is present it is certainly in only a very small percentage. The fall was witnessed by Mr. James Cecil of Washington, D.C., Mrs. Joseph B. Cooper of St. Mary's County and many others. According to Mr. Francis Cecil and others with whom he has talked the meteor swept across the late afternoon sky from southwest to northeast and had the appearance of a giant fireball. It was described by Mr. James Cecil as fiery red in appearance and about the size of a canteloupe or about 1/4 degree in diameter. Another person who witnessed the event is reported to have been up in a cherry tree eating black-heart cherries and when the meteor flew across the sky and exploded he was extremely terrified and thought the end of the world was at hand. This observer said that the path of the fireball was from southwest to northeast. According to all observers the meteor exploded with great violence and the noise accompanying this explosion was heard by a very large number of persons. The man in the cherry tree stated that, following the explosion, there was in the sky a trail of smoke which seemed to him to be about four city blocks in length. It was also heard by the aunt of Mr. Francis Cecil, Mrs. Joseph B. Cooper, who dates the occurrence by the fact that it was a little less than two weeks before her marriage, which took place on June 30, 1919. She also remembers the heavy layer of black smoke which was visible in the sky following the explosion. Mr. Francis Cecil himself remembers distinctly the explosion and the long rumble which followed it, and records that its violence was sufficient to shake the window panes of the store at Great Mills where he happened to be at the time. Other persons have said that plates on shelves were shaken. A few days after the meteor had exploded, Captain John Forrest, who died in the winter of 1935, came to Mr. Cecil's grandfather with what he described as a piece of the meteorite that had fallen a few evenings previously. He said that he had seen the event, had heard the explosion and that a piece of the rock had fallen from the sky and struck up the dust immediately at his feet. He said that he at once dug the object up and found it very hot. After it had cooled off he broke off a small piece which he gave to Mr. Cecil's grandfather, which is the piece now available for study. Repeated efforts by Mr. Cecil to locate the larger portion which had been kept by Captain Forrest have proved fruitless. Captain Forrest is reported to have said that as he watched it after the explosion the fragments appeared to settle to the earth through the sky and appeared to fall mostly into the Chesapeake Bay. It would seem likely therefore that the explosion must have taken place at a rather considerable height. Captain Forrest's home was located about one mile from St. Jerome's Creek near Ridge. The specimen was shown to Dr. W. F. Foshag of the United States National Museum on December 9, 1937 who stated: "I can definitely say that there is not the slightest doubt but that the specimen is a meteorite." Mr. Cecil has conferred with the widow and the son of Captain Forrest, both of whom knew of

the meteorite and of the event of its fall, yet neither could give any data as to the present whereabouts of the larger fragment; although they both remembered seeing it as recently as 1933."

The second notice of this meteorite was given by Dulaney (1938) from which the following is quoted: "One of four Maryland meteorites recorded has been presented to the Maryland Academy of Sciences by Frank Cecil.... the story of its fall is as follows: About 6 P.M. one day in June 1919, residents of St. Mary's county were startled by a ball of fire streaking across the clear sky. The ball exploded and red-hot fragments settled earthward. Then followed a series of rumbling sounds like distant thunder. Buildings in a radius of ten miles were jarred and shaken. John Forrest, working in a field adjoining his home, saw the meteor and, as he watched, something struck up a cloud of dust 20 feet from where he stood. Going to the spot he dug into the ground and unearthed a gray-brown stone, very hot, which he carried on his hoe to his house and placed it aside to cool. Three days later he gave it to William Matthews, who in turn presented it to Mr. Cecil..... It is magnetic, a characteristic possessed by no earthly stone."

The St. Mary's meteorite was included in the Second Catalog of Meteoritic Falls Reported to the Society for Research on Meteorites (Nininger, 1939). A previously unpublished photograph of the specimen, obtained from Mr. Cecil, which shows the structure on the broken surface, is given as Fig. 2.

UNVERIFIED AND DISCREDITED REPORTS

Discredited and unverified accounts of the fall or finding of meteorites arise generally in one of the following ways: Reports of the finding of iron meteorites often turn out to be finds of lumps of iron or iron ore of clearly terrestrial origin, or of other dark heavy rocks. Reports of the finding of stone meteorites often turn out to be finds of dark, heavy igneous rock fragments. Such reports are especially frequent in glaciated areas. Reports of falls come in two classes: (a) where something was thought to fall but did not; (b) where something fell but was not a meteorite. Those of the former type include those based on sight and sound. The commonest result from the observation of a meteor that appears to fall at a distance from the observer. Such observations usually are of meteors that do not reach the earth. Reports based on sound usually involve explosions, the cause of which is not known to the hearer. Those of the second type include various situations ranging from rocks thrown by small or not-so-small boys to projectiles, objects dropped from aircraft, missiles projected by firearms or by explosions as in blasting. The most tantalizing reports are those based on recollections of the past or recollections of information received second hand. Examples of several of these sorts of reports as they were found in my survey of Maryland meteorites are given below:

CAMBRIDGE

Mr. J. Maurice Bowser informed me that in the summer of 1934 he discovered a heavy object, about the size of a man's fist, in a marsh in the

Black Water Migratory Bird Refuge, about 13 miles south of Cambridge, Maryland. Mr. Bowser thought that this was an iron meteorite. It was found on the surface of the earth and had a "pimply" or blistered surface texture. He stated that he had given it to the Superintendent of the CCC camp, Mr. Peter J. Van Huizen. I wrote to Mr. Van Huizen at the Sacramento Migratory Wildlife Refuge, Willows, California, on 11 October 1938 but received no reply. I suspect that the object in question was iron ore.

SIDELING HILL

On 9 June 1938 I wrote to Dr. Ralph W. Stone of the Pennsylvania Geological Survey, Harrisburg, Pennsylvania to ask if he had any reports of Maryland meteorites. Dr. Stone replied on 13 June 1938 as follows: "Only one meteorite in Maryland was reported to me and that at least five years ago. One of our legislators from Fulton County told me that some years prior a supposed meteorite was found by Jacob Nixon, whose son then had a road stand, called Forest Park, between Hancock and Cumberland. The park was described as near Bellgrove, on Sideling Hill. That is every bit of information on the subject; no mail address and no description of find. Chances are probably 100 to 1 that it is not a meteorite and now is lost anyhow." No further information on this report has developed.

EMMITSBURG NO. 2

In 1937, Mr. T. Milton Oler, Jr., 542 Tyson Street, Baltimore, informed me that he was acquainted with Mr. J. K. Hays of Emmitsburg, Maryland in whose yard a meteorite had fallen. Mr. Oler offered to talk to Mr. Hays and report to me. He wrote to me on 10 November 1937 as follows: "I have talked with Mr. Hays since I last saw you and the following is his description of the falling of a meteorite in his yard in Emmitsburg. About the year 1897, on a midsummer evening shortly after dark, Mr. and Mrs. J. K. Hays, their young son and Mr. Hays' mother were sitting on the porch of their home on the outskirts of Emmitsburg, Md. Mr. and Mrs. Hays both saw the meteorite at the same time as it fell on a course almost paralleling the earth and proceeding from west to east. It landed in their yard about 100 yds. from the house and was still red hot when they reached it. One of the things Mr. Hays particularly remembers was his infant son telling his grandmother 'it was hot stone' when they returned to the house. The meteorite was of an oval shape with a long diameter of about 8" and a short diameter of about 4" and had the appearance of a large clinker. It was very heavy considering its size but there is no record of its weight. It sank in the ground about 6" but the fact that the earth was baked hard from a long spell of extremely dry weather probably accounts for this slight penetration. The meteorite was in the possession of Mr. Hays until a few years ago and Mr. Hays daughter remembers seeing it resting on a shelf in the cellar for years. As to its present location, no one seems to know what happened to it. Mr. Hays thinks that his son threw it out. There is a possibility that a fragment was given to the Sisters at the College in Emmitsburg and they may be able to give you additional information."

Following Mr. Oler's suggestion I wrote to St. Joseph's College and under date of 23 November 1937 received the following reply from Sister Lucille, Principal, St. Joseph's College High School, Emmitsburg, Md.: "As

the Museum is located in the high school buildings your letter was sent to us. We have searched for the piece of meteorite; likewise for information regarding same, but to date our search has proved futile. I suggest your writing to the Fathers at Mount Saint Mary's College, Emmitsburg; also to Mr. J. T. Hays, Box 168, Emmitsburg. I am told that in his home there is a piece of metal, leaden color speckled with gold which is being used as a door knob. This is treasured by the family. Could it possibly have bearing on that for which you are searching?"

I then wrote to Mount Saint Mary's College and under date of 8 December 1937, received the following reply from Rev. J. L. Sheridan, President: "We regret very much that prolonged search for the information sought in your letter of 24th ultimo failed to produce results. A gentleman who was present when the meteorite fell in the Hays' yard tells us that it could not be found. As to the former (1854) meteorite we have no data either. Sorry, indeed that we cannot be of service, as the subject is of much interest to us too." The reference to a second witness was of considerable interest, so I wrote Father Sheridan for more information about him. Father Sheridan's reply was: "The name of the gentleman who was with Mr. Hays on the occasion is Harry Weant, Emmitsburg, Md. He is our plumber. I think however that you can learn nothing more than we wrote you. He told us all he could - and that was very little from a scientific point of view. I should be grateful for the brochure you hope to publish. Many thanks. With every good wish for your success." I received no replies to letters addressed to Mr. Hays. I then made inquiry of Miss Leah B. Allen, Williams Observatory, Hood College, Frederick, Md., who wrote to me on December 8, 1938 as follows: "I have written to a Hood alumna whose home is in Emmitsburg to ask her if she has heard anything of the missing meteorite, I'll let you know if I can get any information on the subject." This is where the trail ended as far as I was concerned.

ROCK HALL

An Associated Press dispatch from Rock Hall, Md., dated March 2, 1935, published in the *Baltimore Evening Sun* of that date reads: "Meteorite Found on Shore Farm: A large meteorite has been dug up and is now on display on the farm. The mass is thought to be iron. Many pebbles are imbedded in it; the weight of the object is about 200 pounds. The farm on which it fell is owned by Louis Aiello of Baltimore and Rock Hall and is tenanted by John Usilton. The 'meteorite' has been placed on a cement foundation in front of the house. A. Carroll Wilson, who occupies an adjoining farm, has said that on the night of a snowstorm recently he heard a rumbling noise and thought it was caused by the firing of the big guns at the Aberdeen Proving Grounds. The next morning it was discovered that a large pine post near where the mass fell had burned."

I wrote to Mr. Louis Aiello, c/o Louis Aiello & Son, Inc., 3700 Gough Street, Baltimore, on 3 June, 1938 and received the following reply dated 16 June 1938, from Mr. Peter Aiello, President: "My father Louis Aiello, died last November, therefore I am answering your letter with reference to the 'meteorite'. There is an object that looks like furnace slag placed in front of our farm dwelling at Rock Hall, Maryland and thats all the information I can give you. If you care to examine it, you may do so by going there. Anyone at Rock Hall will be able to tell you where our place is located." I was never able to get to Rock Hall nor to obtain any more information. The reference to imbedded pebbles, to looking like furnace slag,

and to the burned post all suggest that the object is not a meteorite. It should however be checked.

WYMAN PARK

In 1935 a piece of iron was brought into the Geology Department of the Johns Hopkins University. It was stated to have been found in Wyman Park, Baltimore, and was suspected of being a meteorite. Chemical tests indicated that it contained no nickel. Etching a sawed surface revealed no characteristic etch figures. Prof. J. D. H. Donnay concluded that it was not a meteorite and might have been the result of some iron object melted in the University furnace, included with the cinders that were used on a path.

LOGAN FIELD

The *Baltimore Evening Sun* for 16 October 1934 carried the following account: "Piece of Giant Meteor Found at Logan Field: Fragment Weighing More Than Half a Pound Discovered in Search Following Flash and Whir Overhead Last Night: One piece of the giant meteor which flashed across the heavens from the eastern part of Baltimore county and disappeared after being sighted by persons at Logan Field and Ellicott City, headed in the general direction of Westminster, was found today on a runway at the Logan Field airport. L. M. Rawlins, manager of the airport, was present last night when a fragment of the meteor hissed through the air and fell on the landing field. However, before he and others who had also witnessed the oddity could reach the spot where the object had landed, it had burned out and disappeared in the blackness of night. This morning, after a search of the vicinity, a section weighing nearly half a pound was discovered on a runway of the field. Dr. J. G. H. Donnay, associate professor in mineralogy at Johns Hopkins University, was notified and came to the field. Under the microscope the portion was examined and a piece of it was taken by the mineralogist back to the university for further study. 'We saw it flash by at about 9:30 last night', said Mr. Rawlins. 'It had a tail several feet long and we could see it strike the earth apparently almost at our feet,' he added. Chief Julius Wosch, of the Ellicott City police, reported that while standing on a street corner there, the meteor passed through the air high overhead. 'It moved with terrific speed, and made a sizzling noise as it passed,' he said. He added that it disappeared in the direction of Westminster." Another article in *The Sun* gave a similar account, quoting Chief Wosch to the effect that he was with Charles Gendason of Ellicott City at the time and saying that "it burst into flames over Westminster" and that he saw it at 9:25 p.m., that it had "a blue center and a red rim." It was also said to have been seen in Westminster by Paul Wimert, "where it burst into white flames and disappeared." The fragment examined by Prof. Donnay was not a portion of a meteorite.

HAMPDEN

A letter dated Baltimore, September 20, 1869, addressed to Mr. P. T. Tyson from Mr. Charles F. Hanna, preserved in the letter file of the Maryland Academy of Sciences, records that: "At 7:20 p.m. on Aug. 13, 1869, on Falls Road, north of Hampden, I saw an object approaching from the east. When it was 30 feet off the ground it disorged. I thought it was a rocket from Schutzen Park on Belair Road. It landed with a thud that was heard by seven

people. It was 15 feet 6 inches long. Five minutes later it was perfectly white, it writhed like a serpent. It later thinned and 15 minutes later diffused into the air. It was also seen from Mount Washington. It was seen by others."

WESLEY AVENUE, BALTIMORE

The *Baltimore Evening Sun* for May 12, 1936 carried an article from which the following is quoted: "Meteor Evidence Lacking in Blast: Some Wesley Avenue Dwellers Think That's What They Heard Last Night: A first class mystery presented itself to residents of the 5500 block Wesley Avenue today as they compared notes on what happened late last night when a blinding flash and loud explosion startled home-owners in the neighborhood....Some thought a falling meteor might be responsible. Edward W. Berry, 5512 Wesley Avenue, told police that he and his mother-in-law, Mrs. Jane Lee Selby, were sitting in the front room, looking out toward the rear yard through a dining-room door when suddenly, without warning there was a blinding flash, a loud explosion that 'sounded like dynamite.' Berry said he ducked his head instinctively. He looked up almost at once however and said he saw the light fading out. The flash he said was 'bluish, whitish, and greenish.'..... Berry said the explosion was loud enough to shake his house and rattle the windows. Officials of the gas and electric company checked up and said that a street light had burned out last night on Wayne Avenue, in the 5200 block, a couple of blocks from Wesley Avenue. This might have caused a flash, but there was nothing to show that it could have caused a loud noise."

BALTIMORE

Dr. W. F. Foshag, Curator of Mineralogy and Petrology at the United States National Museum in Washington, D. C. wrote me on 1 November 1937 as follows: "Some time in the spring Wise and Moore brought me some of the supposed meteoric specimens but these proved to be nothing more than nodules of limonite. I believe they had taken them previously to the U.S. Geological Survey where some one reported they were possibly meteoric. Our examination shows that there is nothing meteoric about them."

METEORS

Meteor showers have frequently been observed in Maryland, especially in Baltimore. A large shower occurred on the morning of 12 or 13 November 1833. The *Baltimore Patriot* and *Niles Weekly Register* report that it began at 4:30 a.m. and lasted over 50 minutes. During this shower, a meteor estimated as having a diameter of at least six inches was seen to explode over northwest Baltimore with a loud report. The *Baltimore Gazette* and the *Baltimore American* also report this shower. It is reported that Thomas Kenny watching from the corner of Charles and Fayette streets found the sight especially wonderful, having seen one meteor describe a figure three before burning out. In many succeeding years the annual meteor showers early in August - the Perseids - and in mid-November - the Leonids, and occasionally others attract sufficient attention to justify notice in the press. Rarely is the fall of a meteorite associated with such a shower of meteors. An Associated Press dispatch from Annapolis, Md. as published in the *New York*

Sun for 4 May 1945 reports that Captain H. E. Avery of the Maryland Pilots Association said he saw today a blue ribbon of light about twenty feet wide with drifting fragments in the Chesapeake Bay. Captain Avery said he was in his cabin cruiser Lone Eagle in Annapolis Harbor at 3:40 a.m. when he saw the ribbon of light, which he said lighted up the whole sky and seemed to fall in the north. He added that a loud 'whoosh' accompanied the light, but he heard no sound of a falling object. He said that he noticed the phenomenon in what appeared to be the vicinity of the Marine barracks ship Reina Mercedes. Other reports from the middle Atlantic states that day included the statement by Dr. Roy K. Marshall, director of the Fels Planetarium at the Franklin Institute in Philadelphia that the object was probably a "bolide, the largest kind of meteor."

METEORITE SPECIMENS IN MARYLAND

As has been previously indicated, the known fragment of the St. Mary's meteorite remains in the state of Maryland. If specimens of the other three known Maryland meteorites are to be seen, a Marylander must go at least as far as the National Museum in Washington. The collection of the Geology Department of the Johns Hopkins University contains specimens of seven meteorites:

1. Weston, Connecticut (two small fragments, donor Maryland Academy). The first observed and described meteorite fall in North America.
2. Canyon Diablo, Arizona. (one large individual weighing about 100 pounds, gift of Dr. Howard A. Kelly; and one very small fragment; the meteorite from "Meteor Crater".)
3. Nelson County, Kentucky.
4. Russel Gulch, Colorado
5. Marion, Linn County, Iowa.
6. Toluca, Mexico (three pieces of the meteorite of which at one time it was said that there were a larger number of pieces than of any other.)
7. Mocs, Transylvania (one of about 3000 stones that fell February 3, 1882).

It is also interesting to note that in 1939 Dr. Howard A. Kelly also presented to the observatory at Vassar College a meteorite from Canyon Diablo (Meteor Crater) Arizona. (*Baltimore Evening Sun*, April 12, 1939).

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MUDDY CREEK FALLS - A NATURAMA

by
Charles J. Stine

Deep in the primeval stand of noble hemlocks in the Swallow Falls State Park, Garrett County, lies Muddy Creek Falls, Maryland's highest natural waterfalls.

The Muddy drains Pine Swamp located on the western border of Maryland and West Virginia, follows an erratic course for several miles and terminates its journey with a sparkling cascade over a 70 ft. precipice joining the Youghiogheny River 130 yards down stream.

In all but freezing weather the area immediately adjacent is enshrouded by a delicate mist from the falls.

The spray, saturating the fissures and pockets in the surrounding sandstone, produces an ecological situation highly favorable to a hydrophilic flora and fauna.

The area is a herpetologist's delight. Three species of salamanders, not at all easy to find in Maryland, are common during the warm months at Muddy Creek Falls.

On the precipitous face of the falls the Allegheny Mountain Salamander, *Desmognathus ochrophaeus ochrophaeus* and the Seal Salamander, *Desmognathus monticola monticola* can be seen fully exposed on rocky ledges during the day. This is somewhat unusual, for they are habitually secretive and nocturnal.

The perpetual mist and twilight-like light are probably responsible for the habit deviation. The Northern Spring Salamander, *Gyrinophilus porphyriticus porphyriticus* may be found nearby beneath the rocky rubble and recumbent hemlock logs under a rocky overhang on the path to Swallow Falls.

Also well adapted to the prevailing moisture on the face of the falls are numerous delicate Round-Leaved Sundew, *Drosera rotundifolia*. Passively insectivorous, the rosette of rounded leaves offer an irresistible attraction in the form of glistening nectar-like droplets to passing insects.

In the spring the Verry, *Hylocichla fuscescens*; the Blue-headed Vireo, *Vireo solitarius*; and the Blackburnian Warbler, *Dendrocia fusca*, birds of the moist woodland, sing and nest in the shade of the conifers.

Ferns abound in the area. Dr. Clyde E. Reed reports at least 20 common species and five or six uncommon species are found over the surrounding terrain. One clubmoss, the Lloyd's Clubmoss, *Lycopodium porophyllum*, known only from Garrett County, occurs on the face of the falls. Mushrooms of many kinds also are abundant.

To be at Muddy Creek Falls after a new-fallen snow is an exhilarating experience. At the top of the falls the forest is quiet and cathedral-like.

Mammal tracks dot the powdery covering, telling little stories in the snow. Here a Deer Mouse, *Peromyscus maniculatus*, beats a hasty retreat to a hide-away beneath a stump; here impressions of the wings indicate an abrupt take off by a Crow, *Corvus brachyrhynchos*. Down by the creek a Raccoon, *Procyon lotor*, stopped for water. Overhead the twittering of the Black-capped Chickadee, *Parus atricapillus* and chattering of the Chickadee, *Tamiasciurus hudsonicus*, seem to bear vociferous testimony to the beauty of the scene.

Whatever the season, whatever the time, once this outstanding natural wonder is visited it is not soon forgotten.



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